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THE TYPHAE OF MARYLAND AND VIRGINIA.

IVAR TIDESTROM.

In the manuals of recent dates¹ and also in the North American Flora² the two circumboreal species *Typha latifolia* and *T. angustifolia* are credited to our region. These are readily distinguished by their floral structures and particularly by the pollen grains — the latter having simple grains while in the former they are in tetrads. Besides, the commonly contiguous spikes in *T. latifolia* and its much broader leaves serve to distinguish it from *T. angustifolia*. In the latter the spikes are separated by an interval of from 1 to 5 cm. or more and the leaves, at least in the normal form, are only one-half as wide or about 6 mm. more or less. There are other characters which need not be mentioned, since they are given in the manuals.

In the Bracteolatae or *T. angustifolia* group there are some variants which approach *T. latifolia* in outward appearance but have the floral structure and remote spikes of the other species. Of these we find one in Maryland and Virginia.

On October 17, 1909, Dr. C. L. Alsberg and myself, while botanizing in the neighborhood of Cape Henry, came upon an area of *Typha* about one mile or more west of the lighthouse. At first I thought we had *T. latifolia* but upon closer examination I noticed that we had a plant before us with leaves as broad as those of *T. latifolia* and the remote spikes of the other species. I remarked to my companion that we had a new form or perhaps an old forgotten one before us. Since the variation in the size and form of our water- or marsh-plants ranges between rather wide limits, I did not wish to propose a new

¹ Britton, Man. 38, 1905. Gray's Man. 68, 1908.

² N. Am. Fl. 17¹: 3-4, 1909.

form until more was known about the distribution of the plant and flowering specimens had been collected.

On August 3-4, this year, Professor A. S. Hitchcock, one of his sons and myself botanized between Leonardtown and Millstone, St. Mary's County, Md., and on this trip we located another area of the same form. We were able to refer the plants immediately to the Bracteolatae, although they had the appearance of *T. latifolia*. There appear to be no structural characters upon which this plant can be separated from *T. angustifolia*. The broader leaves and somewhat larger spikes can hardly merit more than formal or varietal distinction. If we should accept the views of those whom an eminent French authority has called "les pulverisateurs" or "les mihicists," then a mere difference in the aspect of a plant would compel us to erect a new species. This we cannot do conscientiously in the present case until more of the life history of the plant is known. Rafinesque described a number of species of *Typha*, but these will probably remain indeterminable since he gave no stable characters.

The following summary may serve in the identification of the forms growing in Maryland and Virginia:

Spikes commonly contiguous.

TYPHA LATIFOLIA L. Sp. Pl. 971, 1753. Kronfeld, Mon. (in Verh. Zool.-bot. Gesellsch. Wien) 176, 1889.

Plants 1.5-2.5 m. in height: leaves flat, 10-20 mm. broad, equaling or exceeding the inflorescence, spikes nearly equal in length (10-30 cm. long); the pistillate dark-brown; pistillate flowers without bracteoles; pollen grains in tetrads.

In marshes and wet places: common.

Spikes commonly remote.

Leaves about 6 mm. wide.

TYPHA ANGUSTIFOLIA L. I. c. Kronfeld, l. c. 150.

Plants 1-1.5 m. in height: leaves plano-convex, exceeding the inflorescence: spikes of nearly equal length (10-30 cm. long), the interval varying from 1 to 5 cm.; the pistillate brown; flowers bracteolate.

In fresh and brackish marshes. I have observed the species in many localities in southern Maryland and on the Eastern Shore of Maryland and Virginia. Mr. McAtee has observed it at Hyattsville, near Washington.

Leaves about 10 mm. or more in width.

Typha angustifolia var. *virginica*, var. nov.

Planta robusta 2–2.5 m. alta. Folia glauca planoconvexa ca. 10 mm. lata caulibus multum longiora. Spica feminea cinnamomea 20 mm. lata 20 cm. longa, floribus bracteolata, e spica mascula 1–5 cm. distans. Pollinis granula solitaria.

In brackish marshes: near Cape Henry, Va. (Tm. 3072); with *Myrica cerifera* and *Baccharis halimifolia* in marsh near Millstone (mouth of the Patuxent River), Md. (Tm. 5141) type material.

Typha glauca Godr., which was viewed as a hybrid between *T. angustifolia* and *T. latifolia* by Kronfeld, appears to lie between the two species. He characterized it as follows: *Planta robusta, 12–15 dm. alta. Spica masc. et fem. contiguae. Axis spicae masc. pilis linearibus sordido-albis instructus. Pollen.... Spica fem. castaneo-brunnea. Flores sine bracteolis; stigmata linearia pilos albos acutos superantia. Fructus.... Folia caulinum floriferorum laminata, glauca, laminae planae, ad 10 mm. latae, inflorescentiam superantes.*

As pointed out by Kronfeld this form has the habit and ebracteolate flowers of *T. latifolia*, and the color of the spike and form of the stigma of *T. angustifolia*. I have never observed any plant of the above description. Our variety (*virginica*) has nothing in common with *T. latifolia* except the wide leaves. These however are *plano-convex* in cross-section as in typical *T. angustifolia*.

BUREAU OF PLANT INDUSTRY, Washington, D. C.

TWO LOST CARICES OF EASTERN MASSACHUSETTS.

M. L. FERNALD.

IN 1836, Dewey¹ described from near Boston two plants collected by B. D. Greene and preserved in the Torrey Herbarium, one as *Carex Greeniana* Dewey, the other taken to be *C. binervis* Smith, the latter said to be "probably introduced like *C. panicea*, from Europe; it is very like the *C. binervis* of Europe." Subsequently, it was generally stated that the plants which Dewey described were *C. helodes* Link (*C. laevigata* Smith) and *C. Hornschuchiana* Hoppe (*C. fulva* of Authors, not Good.), though, as indicated below, there has been

¹ Dewey, Am. Jour. Sci., xxx. 61 (1836).

much confusion in the exact interpretation of Dewey's types and consequently in the statements of which one is *C. helodes*, which *C. Hornschuchiana* — a perplexity to which Dewey himself contributed not a little. In 1845, in Wood's *Class Book*,¹ Dewey included both *C. binervis* and *C. Greeniana* with the statement that the latter "Resembles *C. pelva*, Good. [misprint for *C. fulva*], but differs in its fruit and glume." This statement (with *C. pelva* corrected to *C. fulva*) was repeated in subsequent issues of Wood's *Class Book* until 1861, when Dewey reversed the treatment,² changing to *C. fulva* Good. with the synonym "*C. binervis* Ed. 1," and *C. laevigata* Smith with the synonym "*C. Greeniana* Ed. 1" and the statement, "This and the last probably introduced from Eur."

Torrey, in his *Monograph of the North American Cyperaceae*,³ followed Dewey's original publication; but Carey, in Gray's *Manual*,⁴ taking his cue possibly from Dewey's statement in the early editions of Wood's *Class Book*, made *C. binervis* Dew., not Smith = *C. laevigata* Smith from "Massachusetts (Tewksbury? B. D. Greene): probably introduced"; while *C. Greeniana* Dew. was reduced to *C. fulva* and said to come from a "Pond at Tewksbury."

In the 2nd edition of the *Manual* however, Carey also reversed his treatment⁵ and made *C. Greeniana* (not *C. binervis* Dew.) synonymous with *C. laevigata*, and *C. binervis* Dew. synonymous with *C. fulva*; and this understanding of the matter was followed through the three succeeding editions of the *Manual*. In his monumental *Illustrations of the Genus Carex*, Francis Boott⁶ treated *C. Greeniana* Dew. as identical with *C. fulva*, and *C. binervis* Dewey as identical with *C. laevigata*; and Bailey, in his *Preliminary Synopsis of North American Carices*,⁷ followed Francis Boott and the earlier statements of Dewey in Wood's *Class Book* in treating *C. Greeniana* as *C. fulva*; and in a recent paper upon Newfoundland, Professor Wiegand and the writer,⁸ relying upon Boott's *Illustrations* and Bailey's *Synopsis*, spoke of *C. Greeniana* Dewey as probably a form of *C. Hornschuchiana* Hoppe (*C. fulva* Auct.). In discussing the Newfoundland and Anticosti

¹ Dewey in Wood, Cl. Bk. 424 (1845).

² Dewey in Wood, Cl. Bk. 764 (1861).

³ Torr. Ann. Lyc. Nat. Hist. N. Y. iii. 423, 424 (1836).

⁴ Carey in Gray, Man. 559 (1848).

⁵ Carey, l. c. ed. 2, 528 (1856).

⁶ Boott, Ill. Car. iv. 137, 163 (1867).

⁷ Bailey, Proc. Am. Acad. xxii. 112 (1886).

⁸ Fernald & Wiegand in Fernald, RHODORA, xiii, 130 (1911).

plant which we proposed as a new American variety of *C. Hornschuchiana* (var. *laurentiana* Fernald & Wiegand) we unfortunately overlooked a paper which was published by Mr. K. K. Mackenzie in 1910. In this paper Mr. Mackenzie had given a clear discussion¹ of the same plant (seen by him from Anticosti and Miquelon and identified with the Massachusetts plant of B. D. Greene which had often been called "*C. fulva*") and proposed it as a new species, *C. fulvescens*, with the suggestion that the specimen collected long ago by Greene near Boston was "possibly introduced through wild fowls from further north," and that the old report of *C. fulva* from Newfoundland arose from finding this species there.

In his discussion of *Carex fulvescens* Mackenzie points out that, in spite of the crisscross statements of Dewey, Carey, and others (including the present writer) in regard to the Greene plants, the specimen in the Torrey Herbarium "marked *Carex Greeniana* is a specimen of the European *Carex helodes* Link (*Carex laevigata* Smith) and has the long-acuminate or aristate scales of that species, in this agreeing with Dewey's description, which calls for a plant with cuspidate or mucronate scales." Thus, it may be concluded, the identity of Dewey's *C. Greeniana* is at last definitely and satisfactorily settled.

But the main object of these notes is to direct the attention of local botanists to the two plants, *C. helodes* Link (*C. laevigata* Smith) and *C. Hornschuchiana* Hoppe, var. *laurentiana* Fernald & Wiegand or *C. fulvescens* Mackenzie.² There is no evidence that either of these plants has been found in Massachusetts since their discovery by Greene. Whether *Carex helodes* (*C. laevigata*) was indigenous is questionable, since the species has not been found elsewhere on our side of the Atlantic. But the other plant (*C. Hornschuchiana*, var. *laurentiana* or *C. fulvescens*) which Mr. Mackenzie identifies without question with the Newfoundland, Miquelon and Anticosti plant, is strictly American and ordinarily separable by its larger perigynia and sharper scales from the Old World *C. Hornschuchiana*.

As already pointed out by the present writer³ and as previously surmised by Mackenzie, the plant was known to Goodenough in

¹ Mackenzie, Bull. Torr. Bot. Cl. xxxvii, 239–241 (1910).

² Whether the plant is to be considered an American variety of *C. Hornschuchiana*, which seems to Professor Wiegand and the writer the logical treatment of it, or a distinct species, as Mr. Mackenzie interprets it, is a minor question with perfectly sound reasons for either course.

³ Fernald, RHODORA, xlii. 130 (1911).

1794 "from *America* and *Newfoundland*." The basis for Goodenough's statement was long a mystery and we find the great Francis Boott, just before his death, still impressed with the fact, that "It is remarkable that Goodenough originally received *C. fulva* from America, and that the late Mr. B. D. Greene found it some years ago near Boston, and that no one has since met with it there or elsewhere in the States."¹ The occurrence of the plant in Newfoundland is now clearly demonstrated, and besides from there and the problematic station of B. D. Greene near Boston we know the plant also from bogs or boggy spots on Anticosti and Miquelon, but nowhere on the North American continent. That it has been found elsewhere there can be little question, since Goodenough's report of it from Newfoundland is now verified and he had also seen the plant "from *America*."

In the hope of determining with more exactness the stations where Greene had found his famous specimens the writer appealed to Dr. N. L. Britton, and in reply to these inquiries Mr. Mackenzie has kindly sent a full statement of the data found on the original sheets in the Torrey Herbarium; but unfortunately neither of the sheets indicates anything but "Boston B. D. Greene." Among Greene's own specimens at the Boston Society of Natural History Dr. J. A. Cushman has made a painstaking search and finds only one sheet: nothing to show for *C. helodes*, but a most important sheet of *C. Hornschuchiana*, var. *laurentiana*. This bears a small label through which the specimen is thrust, with the following in different inks but apparently all in Greene's hand: "C. fulva. B. D. Greene [followed by a space where a word is now torn out] but not limosa growing with it in pond at Tewks^y?" and in pencil after the last word (hand unidentified): "certè." The sheet bears also two papers with notes by Francis Boott and the penciled note of Dr. C. W. Swan: "The original specimen found by B. D. Greene at Tewksbury, Mass." Boott's comments are interesting though of no importance in settling the exact station: "These 3 plants I part with as a miser does gold entrusted to him. The Georgia one I suppose to be *C. Floridana*.... *C. fulva* & *C. laevigata* we owe to you & it behoves you to find them again. I take them to be *C. Greeniana* & *binervis* of Torrey [by which he obviously meant Dewey]."

The statement on Greene's label, that the plant grew with *Carex*

¹ Boott, Ill. Car. iv. 138 (1867).

limosa in a pond (presumably at Tewksbury) gives an important clue, for Tewksbury was one of B. D. Greene's great collecting grounds and he made its ponds and those of Andover famous. There he collected the types of *Juncus militaris* and *Utricularia resupinata*; and on the sandy and peaty margin of Round Pond are found many isolated northern colonies of Coastal Plain species: *Sagittaria Engelmanniana*, *Fuirena squarrosa*, *Xyris Smalliana*, etc. Round Pond has therefore been much visited and always furnishes good botanizing, even at the present time occasionally giving us new records. But the other pond of Tewksbury, Long Pond, is apparently little visited by botanists because its western side is bordered by an extensive quaking bog so deep and wet as to fatigue or drive away all but the most venturesome. Here, however, is the only known station in Middlesex County for *Carex limosa*! A specimen collected by B. D. Greene himself and labeled merely "Tewksbury" is in the Gray Herbarium, but material collected by William Boott on July 8, 1863 is marked "West side of Long Pond." No other station is cited in the *Middlesex Flora*, and it is obviously in this quaking bog or in the western margin of Long Pond, that we must seek the long-lost *C. Hornschuchiana* var. *laurentiana*. On June 17 last Mr. F. F. Forbes and the writer made a first attempt at rediscovery; but we were much too early, though we found young *C. limosa* in abundance. The traveling is difficult, consisting of waist-deep wallowing and tumbling, but by mid-July, when the prize *Carex* of the bog should be sought, traveling there may prove less formidable. At any rate the search is worth making and no effort should be spared to prove whether or not the almost forgotten plant still persists at Long Pond.

In view of the established occurrence of *Carex Hornschuchiana*, var. *laurentiana* in Newfoundland and its great rarity on our continent (found only at one of the ponds in Tewksbury) it is noteworthy that Haggett's Pond in Andover (lying just to the north of Long Pond) furnishes a case of somewhat similar distribution. By all means the most generally distributed grass upon Newfoundland is *Calamagrostis Pickeringii* and, though it is found locally upon our granitic mountains, it is known as a coastwise species only from Newfoundland, Cape Breton Island, and at a restricted station near the northern end of Haggett's Pond in Andover, a famous station discovered by Mr. John Robinson in 1879. It seems probable, then, that *Carex Hornschuchiana*, var. *laurentiana* like *Calamagrostis Pickeringii*, a plant

which at present finds its great development in the Newfoundland area but retains a tenuous hold at remote points in the line of its northward migration, is to be sought in Cape Breton and upon the mountains of northern New England and northern New York.

GRAY HERBARIUM.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT.— XIII.

CYPERACEAE.

CAREX, D TO K.

C. debilis Michx., var. **Rudgei** Bailey. Woods and swamps, common.

C. debilis Michx., var. **Rudgei** Bailey \times **virescens** Muhl. Grove, Revere (*E. & C. E. Faxon*, June 10 to July 16, 1879–80; *H. A. Young*, June 17, 1879); Simpson Meadow, Campus, Wellesley (*K. M. Wiegand*, June 16, 1909).

C. deflexa Hornem. "Essex, Mass., . . . scarce," (Gray's Manual, 6th ed. 611, 1889, under var. *Deanei* Bailey); Blue Hill, Milton (*G. G. Kennedy*, May 27, 1910 and later).

C. Deweyana Schwein. Great Pastures, Salem (*J. H. Sears*, June 26, 1881); Roxbury (*J. A. Lowell*, June, 1846); Concord (*E. S. Hoar*, specimen in herb. of, according to Dame & Collins, Fl. Middlesex Co. 120, 1888).

C. diandra Schrank. Border of salt marsh, common, Newburyport (*F. F. Forbes*, June 14, 1903); Danvers (*J. H. Sears*, 1878); Beverly (*J. Robinson*, June 17, 1879); Boxford (*E. & C. E. Faxon*, June 20, 1878); bog, Lynnfield (*M. L. Fernald*, June, 1907); shore of Mud Pond, Natick (*K. M. Wiegand*, June 10, 1908); Wigwam Pond, Dedham (*C. E. Faxon*, May 26, 1878).

C. diandra Schrank, var. **ramosa** (Boott) Fernald. In brackish marsh, Newburyport (*F. F. Forbes*, June 13, 1903); Lexington (*E. Tuckerman*, no date); "wet meadow, head of pond, Fairy Land," Concord (*H. D. Thoreau*, June 30, ——); open peat-bog, Sudbury

(*M. L. Fernald & H. M. Noyes*, June 14, 1901; *M. L. Fernald, W. P. Rich & E. F. Williams*, June 17, 1902).

C. digitalis Willd. Dry and moist woods. Not reported from northwestern and southeastern sections, but frequent elsewhere (24 stations reported).

[*CAREX EBURNEA* Boott. In the herbarium of the New England Botanical Club is a Carex labelled, "Carex eburnea Boott, Reading, Mass., legit W. H. Manning, July 14, 1882." Accompanying the specimen is another label with the above name in Wm. Boott's handwriting. This specimen is the authority for the record in Dame & Collins, Fl. Middlesex Co., 118, 1888, "Reading (W. H. Manning.) Rare." The specimen is not *Carex eburnea*, as it lacks the pale tubular sheaths characteristic of the species, and its identification is uncertain, especially as the perigynia are wanting. As there is a specimen of true *C. eburnea* from Vermont in the Manning Herbarium, now deposited in the herbarium of the New England Botanical Club, and as Mr. Boott would never have misnamed the Reading plant, it is plain that there has been a misplacement of specimen and label in this case.]

C. exilis Dewey. Bogs and wet meadows; nineteen stations in Essex and Middlesex counties.

Originally described in Silliman's Journal XIV, 351, 1828, Appendix to Caricography. After the original Latin description is the following note: "Flowers in May; found at Danvers, Mass., by Wm. Oakes, Esq., and is a singular and beautiful plant. It grows in small tufts, and also separate, in wet, cold meadows." On the same page Dewey describes a var. *squamacea* with the following note: "Flowers in May-June; found at Ipswich, Mass., by Mr. Oakes in dense and large tufts on the overflowed lands of Ipswich river."

C. festucacea Schkuhr. Sandy soil, filled land off Ipswich St., Boston, not abundant (*F. F. Forbes*, June 24, 1904); railroad by Charles River, Needham (*J. R. Churchill*, June 17, 1887); sandy plain near Lake Cochituate, Natick, not abundant, growing near *C. Bicknellii* with intermediates between the two (*F. F. Forbes*, June 24, 1906); dry railroad bank, Walpole (*G. G. Kennedy*, July 20, 1899); moist field, Mansfield (*J. A. Cushman*, June 1, 1908).

C. festucacea Schkuhr, var. *brevior* (Dewey) Fernald. Dry soil; many reports from central part of district, none from northern part, and only one (Norfolk) from southern part.

C. filiformis L. Bogs and wet places, common.

C. flava L. Wet places, occasional in northern section.

C. flava L., var. **elatior** Schlecht. Georgetown, Lynnfield, Malden, Cambridge, Wilmington, Lexington, Chelmsford, Concord and Dedham.

C. flava L., var. **rectirostra** Gaudin. No reports from northwest or southeast; well distributed elsewhere.

C. foenea Willd. Open woods; reports from scattered stations in central and northeastern portions.

C. foenea Willd., var. **perplexa** Bailey. Central and northeastern portions, occasional.

C. folliculata L. Swamps and wet woods; very common throughout.

C. glaucodea Tuckerm. Moist soil, south side of Blue Hill, Milton (*G. G. Kennedy*, June 14, 1901; other collections since to June 9, 1908).

C. Goodenowii J. Gay. Swamps and wet, sometimes brackish places; common throughout, especially near the coast.

C. gracillima Schwein. Deciduous woods and meadows. Not reported south of the Blue Hills, but common elsewhere.

C. gracillima Schwein., var. **humilis** Bailey. Revere (*H. A. Young*, June, 1879); Edgeworth, Malden (*Wm. Boott*, June 30, 1864).

C. GRAYII Carey. Waste grounds, Cambridge (*W. Deane*, June 27, 1887). Adventive from further west.

C. grisea Wahlenb. Readville, Hyde Park (*S. T. Olney*, May 29, 1868).

C. HELODES Link (*C. laevigata* Smith). Near Boston, perhaps at Tewksbury (*B. D. Greene*, prior to 1836). Not since collected and presumably a casual or adventive plant. See notes by M. L. Fernald, *RHODORA*, XIII, 243-248.

C. HIRTA L. Groves and fields; Danvers, Melrose, Medford, Newton, Ashland; Cambridge (*L. H. Bailey*, according to Dame & Collins, Fl. Middlesex Co., 115, 1888). No reports more recent than 1887.

C. hormathodes Fernald. Salt and fresh marshes and other wet places; frequent in eastern part of district, especially on the coast.

C. hormathodes Fernald, var. **invisa** (*W. Boott*) Fernald. Originally described by William Boott as *C. straminea* var. *invisa*, "Common on margins of ponds and in ditches in sandy soil, E.

Massachusetts. Mt. Desert, Maine." Boott's Massachusetts specimens were from Mystic Pond, Medford, "Ice Pond," Medford, and "Brookline branch R. R." The variety is apparently less common than typical *C. hormathodes*.

C. hormathodes Fernald, var. **Richii** Fernald. Frequent in central half of district, as far north as Ipswich, and south as Walpole. Named from specimens collected in Stoneham by W. P. Rich.

C. Hornschuchiana Hoppe, var. **laurentiana** Fernald & Wiegand. With *C. limosa*, western edge of Long Pond, Tewksbury (*B. D. Greene*, prior to 1836). Not since collected. See notes by M. L. Fernald, *RHODORA*, XIII, 243-248.

C. hystericina Muhl. Newburyport (*A. A. Eaton*, June 30, 1896); Beverly (*J. A. Lowell*, 1847); wet place, aqueduct near Benvenue St., Wellesley (*K. M. Wiegand*, July 6, 1908).

C. hystericina Muhl., var. **Cooleyi** Dewey. Fresh Pond, Cambridge (*Wm. Boott*, no date).

C. intumescens Rudge. Low ground, swamps and meadows; common throughout.

C. intumescens Rudge, var. **Fernaldii** Bailey. Wet woods, Arlington (*C. H. Knowlton*, June 22, 1907); wet place on bank of Charles River, Wellesley (*K. M. Wiegand*, Oct. 7, 1907); Heard's Pond, Wayland (*K. M. Wiegand*, July 17, 1908); wet field, south side of Blue Hill (*Wm. Boott*, July 7, 1853); rich woods on bank of Sudbury River (*A. J. Eames*, July 27, 1909).

C. H. KNOWLTON J. A. CUSHMAN WALTER DEANE A. K. HARRISON	} Committee on Local Flora.
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SALIX CALCICOLA, A LITTLE KNOWN NORTHERN WILLOW.

M. L. FERNALD AND K. M. WIEGAND.

Salix calcicola, n. sp. *S. Richardsoni*, var. *Macouniana* Bebb, Bot. Gaz. xiv. 50, t. 9 (1889). *S. lanata*, var. *Macouniana* Bebb, according to Macoun, Ann. Rep. Geol. Surv. Can., n. s. iii. 70 J (1889), *nomen nudum*.

Since this remarkable shrub was described by Mr. Bebb from one of the Twin Islands in James Bay,¹ it has been found on calcareous cliffs of Table-top Mountain, Gaspé County, Quebec, by *Fernald & Collins* (no. 211, August 7, 1906), on the shores of Kangalaksiorvik Bay, Labrador by *Owen Bryant* (no. 75, September, 1908) at Burwell, Hudson Strait and Churchill, Hudson Bay, lat. $58^{\circ} 50'$ by *J. M. Macoun* (nos. 79,155 and 79,154, July 18 and August 3, 1910), and on limestone barrens at sea-level by Ingornachoix Bay and on Pointe Riche, Newfoundland, by *Fernald & Wiegand* (nos. 3151 and 3152, August 1 and 4, 1910). All this material is essentially uniform in character, agreeing with the original plate of *Salix Richardsoni*, var. *Macouniana* in its short-ovate to orbicular apiculate round-based or subcordate leaves, its dense aments and undivided stigmas. In these characters the eastern shrub is strongly contrasted with Hooker's *S. Richardsoni*, which has the narrowly obovate gradually acute leaves tapering at base, and the stigmas distinctly cleft. Besides these characters, already noted by Bebb, we find that in *S. calcicola* the midrib of the leaf is much wider and more conspicuous and the shorter petiole much broader than in *S. Richardsoni*. In the latter species, the stipules, as shown in Hooker's plate (Fl. Bor. Am. t. clxxxii) and in two authentic specimens in the Gray Herbarium, are lanceolate and bear three conspicuous gland-tipped teeth on each side. In *S. calcicola* the stipules are oblong-ovate to suborbicular, with numerous very fine glandular teeth. In all these characters the eastern shrub is so constant and distinctive that we feel no hesitation in raising it to specific rank; but since the name *Salix Macounii* has already been used in the genus it is advisable, in order to avoid possible confusion, to give the plant a new name.

Salix calcicola is quickly distinguished from all the other species known to us from eastern America by its large terminal (as well as rarely scattered) catkins and by the very large terminal hairy winter-buds which, when fully grown are 5–10 mm. in diameter. The fully mature leaves become quite glabrate and thick, varying from 2 to 5 cm. in length.

Salix lanata L. of Arctic Europe has been reported from "eastern

¹ In his account of the expedition to James Bay, Mr. James M. Macoun (Bot. Gaz. xiii. 117) says that "on the north Twin Island specimens of a new willow were collected which has been described by Mr. Bebb"; but, in the original publication of the plant, Bebb said "South Twin, James Bay. Collected July 17, 1887, by Mr. James M. Macoun, for whom it is named."

British America north of the Arctic circle and Greenland (Hook. Arc. Pl.)"¹ but Bebb remarks: "I have not seen specimens."¹ It is not improbable that Hooker's British American plant was *S. calcicola*, from which *S. lanata* is distinguished by its more elongate and pubescent leaves, its longer aments with more colored hairs, and by the 2-cleft stigmas.

STUMP-HEALING IN *PINUS STROBUS*.—A few years ago I noticed a white pine stump which was healing over! This was contrary to all experience. For such growth is uncommon or rare on low stumps even among our dicotyledons which 'sucker up' freely. And *Pinus Strobus* never grows again from the stump,—*P. rigida* being our only conifer that behaves in this manner. The tree had been cut about four years apparently, and during this time the wound-tissue had spread inward irregularly over the cut surface, in places nearly an inch. How could a leafless plant do this? But one answer was possible,—that nourishment was being derived from some other tree, and root-grafting was suspected as the means, though such could not be proved at the time. Later a similar growth was noted on a small hemlock stump in the Arnold Arboretum. This summer another case has come to my attention, and has supplied evidence showing that root-grafting is indeed the cause of these unusual growths. One pine among a group was cut, and the stump healed slowly for two or three years before dying. These trees stand on a gravelly knoll and their roots are nearly all exposed for some distance from the trunks. Grafting frequently occurred where crossings were formed, especially along a path where the roots had been wounded. It is probable that a parasitism of this sort is not uncommon among our trees, but the sight of an apparently lifeless pine-stump magically healing itself is almost startling.—ARTHUR J. EAMES, Cambridge, Massachusetts.

BOTANICAL LECTURES AT THE LOWELL INSTITUTE.—The Lowell Institute announces among its courses of free public lectures a series on Local Natural History to be given under the auspices of the Boston Society of Natural History. The series upon "The Wild Plants of Eastern Massachusetts" is to be given by Professor M. L. Fernald on

¹ Bebb, Bot. Gaz. xiv. 49 (1889).

Thursdays in January at 4 p. m., in the lecture-room of the Boston Society of Natural History. The dates and subjects are as follows:—

January 4. The Indigenous Flora of Eastern Massachusetts.

January 11. Some Effects of Civilization upon our Flora.

January 18. Some Local Problems in Geographic Botany.

January 25. The Probable Geographic Origin of our Flora.

Tickets may be secured, free of charge, at the Boston Society of Natural History; at the office of the Lowell Institute, 491 Boylston St.; or by sending a request, *accompanied by an addressed, stamped envelope*, to the Curator of the Lowell Institute, 491 Boylston St., Boston.

ERRATA.

Page 76, line 6; for *oxycanthoides* read *oxyacanthoides*.

" 89, " 16; for *Thlapsi* read *Thlaspi*.

" 89, " 17; for *Loesellii* read *Loeselii*.

" 89, " 27; for *Siderites* read *Sideritis*.

" 108, " 28; for K. read H.

" 109, " 12; for Altantic read Atlantic.

" 110, " 7; for our read one.

" 118, " 19; for Mr. read Mt.

" 123, " 22; for vegatation read vegetation.

" 124, " 7; for violet read violet.

" 130, " 3; for *carcina* read *caricina*.

" 132, " 25; Insert comma after for.

" 138, " 27; for *meliciodes* read *melicoides*.

" 138, " 38; after p. insert 131.

" 143, " 25; for are read is.

" 145, " 34; for note 1 see note 1 on page 146.

" 145, " 37; insert ¹ before Warming.

" 146, " 30; for Anticosti³ read Anticosti²

" 146, " 33; for Lawrence,¹ read Lawrence.³

" 151, " 30; for note 1 see note 1 on page 152.

" 165, " page heading; for arundalana read arundelana.

" 186, " 5; for *Acrochaete* read *Acrochaetium*.

" 223, " 18; for tradactylites read tridactylites.

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